

ORIGINAL
(Red)

R-585-2-9-2

NON-SAMPLING SITE RECONNAISSANCE SUMMARY REPORT
HOWMET CORPORATION
PREPARED UNDER

TDD NO. F3-8810-46
EPA NO. PA-357
CONTRACT NO. 68-01-7346

FOR THE
HAZARDOUS SITE CONTROL DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

FEBRUARY 10, 1989

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY

REVIEWED BY

APPROVED BY



Scope of Work

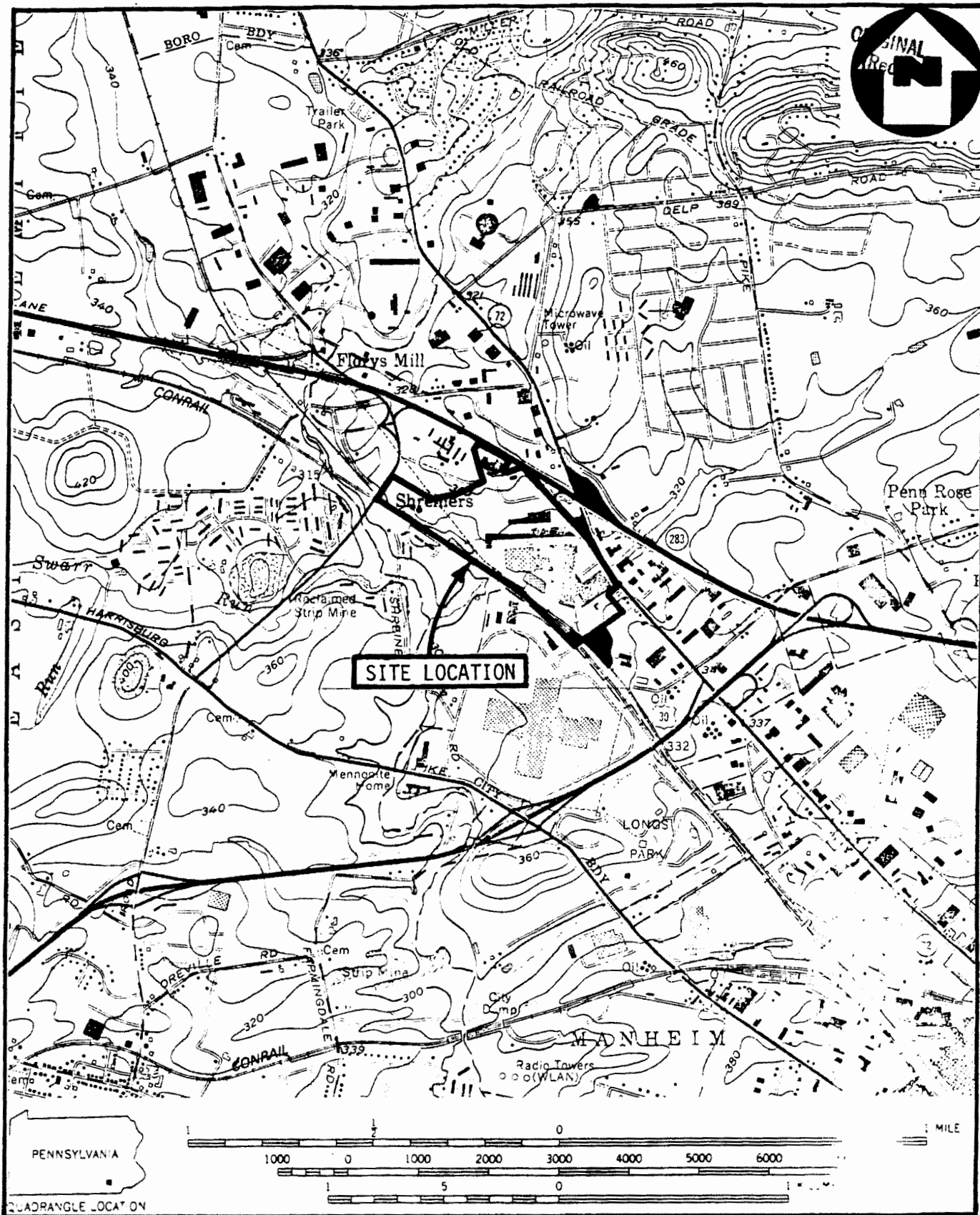
NUS FIT 3 was tasked to conduct a non-sampling site reconnaissance of the Howmet Corporation site, located in Lancaster, Lancaster County, Pennsylvania.

Background Information

The site, which is 89 acres in size, is located on Manheim Turnpike in Manheim Township, Lancaster County, Pennsylvania (see figure 1, page 2). Operations at the site commenced in the late 1940s, and the original owner was New Holland Metals. At an unknown time, Quaker State Metals purchased the site. In 1962, Quaker State Metals had nine wells installed for industrial and potable supply. The site was purchased by Howesound Aluminum during the late 1960s. In 1970, Howesound Aluminum was purchased by Howmet Aluminum. Howmet Aluminum owned the site until 1984, when Alumax Mill Products, Incorporated purchased the site. The site has been in operation for approximately 40 years. Alumax Mill Products, Incorporated currently employs 1,000 people. The vice president and general manager of the company is Guy C. Lanza.

The site currently generates 300,000,000 pounds of aluminum sheet and coil per year. It is surrounded by a 10-foot-high fence with a gated guardhouse at the entrance. Operations at the site have always involved the processing of aluminum into sheets and coils. Alloys associated with aluminum are zinc, magnesium, manganese, silicone, copper, and iron. All of these alloys are associated with past processes (prior to February 1976).

From the late 1960s until December 1971, a landfill in the form of a limestone/dolomite quarry existed on site (see figure 2, page 3). The former quarry is located approximately 50 yards west of the cast house building and the hot mill building, approximately 100 yards south of the paint line building, and 150 yards south of the warehouse where machine parts, lubricating oil, and various items are stored.



SOURCE: (7.5 MINUTE SERIES) U.S.G.S. LANCASTER, PA. QUAD.

SITE LOCATION MAP
HOWMET CORPORATION
 SCALE 1: 24000

FIGURE 1



The quarry measured 150 by 150 by 30 feet in size. It was filled with cold mill oils, hot mill five-percent oil/water emulsion, and filter media of diatomaceous earth from both mills. In addition, industrial trash such as pallets, packing, and paper was disposed in the quarry. According to Steven C. Kirchner, supervisor of Environmental Affairs for Alumax Mill Products, no solvents or hazardous wastes were disposed in the quarry. The quarry was closed for an unknown reason on December 19, 1971 and covered with 20 feet of inert fill. The closure was not overseen by any regulatory agency. The area has been paved, and two storage tanks surrounded by a berm lie over one section. One tank is empty and the other is full of No. 2 fuel oil. During Hurricane Agnes in 1972, the site was flooded and oil was carried onto a neighboring property [REDACTED], where a home well was located. The oil may have come from fuel tanks or from the quarry.

In 1981, Howmet Corporation contracted Kreider Corporation to remove fill from the quarry. Approximately 18,000 cubic yards of material were removed from the fill area, 50 percent of which was fill material. It is unknown where the material was disposed.

In 1975, Howmet Aluminum began generating hazardous wastes during aluminum processing. During this process, cast aluminum ingots are melted down and mixed with various alloys in the cast house. From the cast house, the sheets are rolled into coils at the hot mill building or taken to the mill finishing building for slitting and painting. After the sheets are rolled in the hot mill building, the rolls are taken to the paint line building for a rough coat of paint. The wastes consist of cadmium in baghouse dust from the cast house, chromium from the mill finishing paint line, and filter sludge and paint scrapings from the paint line. Alumax currently reclaims all paint solvents. Four tons of filter sludge per month are sent to Envirite in York, Pennsylvania. Fifteen tons of baghouse dust per month are sent, with 15 tons of cold mill filter media per month, to Waste Conversion, Incorporated. Before Waste Conversion was utilized, and before waste was considered hazardous, Envirsafe hauled waste to the Lanchester Landfill.

All operations at the site are permitted. Alumax Mill Products, Incorporated currently holds 10 permits: 1 NPDES lagoon discharge, 1 RCRA hazardous waste, 1 APES for all air sources, and 7 air permits from various sources. The permit numbers can be found on the table on the following page.

Alumax Mill Products, Incorporated
Environmental Permits as of September 22, 1988

Type of Permit	Permit Number	Source	Date Issued	Expiration Date
NPDES	PAD012912	lagoon discharge	6/15/87	6/15/92
RCRA	PAD049029697	hazardous waste	10/20/80	---
Air	36-308-007	66-inch 3-stand hot mill 80-inch reversing mill	9/01/81	8/31/93
Air	36-308-008A	nos. 3, 7, 8, 9, 10, 11, and 12 slab furnaces	3/14/86	8/31/93
Air	36-308-011	3 annealing furnaces	9/01/81	8/31/91
Air	36-308-047B	nos. 1, 2, and 3 casting system	2/04/88	8/31/91
Air	36-308-058A	dross reclamation	9/03/81	8/31/91
Air	36-308-064A	aluminum ingot scalper	2/05/87	8/31/91
Air	36-318-004	paint ovens	9/01/81	8/31/93
APES	L-009	all air sources	2/26/76	---

The East Petersburg Water Department maintains a well within three miles of Alumax Mill Products, Incorporated. There have been no reports of bad water quality.

There are currently no areas of disposal on site. All wastes are stored by one of three methods: lined 20-, 30-, or 40-cubic-yard hoppers; 55-gallon drums; or above-ground storage tanks that have concrete secondary containment. Wastes are removed for off-site disposal or reclaimed. However, the hot mill coolant, which is a 5- to 10-percent oil-in-water emulsion, is run through a type of "still" to help separate the oil and water. The water is then discharged to the sewer and the oil is sent to a reclaimer.

NUS FIT 3 conducted a site reconnaissance on December 21, 1988.

Sampling to Date

In November 1971, the [REDACTED] residence well was sampled by the Pennsylvania Department of Environmental Resources (PA DER). No contamination was detected; however, through ultraviolet analysis, unidentified organic material was detected.

In September 1982, well no. 9 was sampled. This well is in the approximate location of the fill quarry. A total of 2.3 mg/l oil and grease was identified.

In October 1986, the [REDACTED] residence well was sampled for full-priority pollutants. The sample analysis showed an elevated level of oil and grease. Furthermore, a concentration of zinc 10 times the detection limit was noticed. This does not appear to be a health hazard since zinc has a secondary action level at 500 times this detection limit.

The laboratory analyses for these three sampling events can be found in attachment 2.

Drinking Water Supply

There are three water authorities that serve the area within three miles of the subject site. The City of Lancaster Water Authority serves as far west as Rohrerstown Road, which runs north-south 1/2 mile west of the site. The Lancaster Water Authority serves the entire area east of the site and as far north as East Petersburg and the Lancaster Airport. On Shreiner Road, the authority serves an apartment complex located between 1301 and 1337 Shreiner Road. The East Petersburg Water Authority serves a small, one-square-mile area located two miles north of the site. The East Petersburg Water Authority maintains the only municipal well within three miles of the site. The East Hempfield Township Water Authority serves as far east as Little Conestoga Creek and as far north as Route 283. Residents southwest of East Petersburg and north-northeast of Route 283 are expected to use private wells as a supply source.

Water is supplied to the site and the immediate vicinity to the south and east by the City of Lancaster Water Authority, serving 32,517 people. The system relies on two surface water intakes. One intake is located 3.8 miles southeast of the site along the Conestoga River. It has an allocation of 12 million gallons per day (mgd), but an average of 8.5 mgd is withdrawn. The other intake is located 14 miles southwest of the site along the Susquehanna River, approximately 1,000 feet upstream of its confluence with the Conestoga River. This intake has a 24-mgd allocation, but only an average of 9.6 mgd is withdrawn. The total average daily withdrawal by the City of Lancaster Water Authority is 18.1 mgd. The system is interconnected with the Millersville Borough Water Authority and the East Petersburg Water Authority.

The East Petersburg Water Authority serves a total of 1,327 people. The system relies on one well, one surface water intake, and one spring. The well, which is 300 feet deep, lies 2.25 miles north of the site near Vaughn Road. It has a yield of 0.104 mgd. The surface water intake is located 2.5 miles north of the site along Little Conestoga Creek and has an allocation and withdrawal of 0.042 mgd. The location of Gravers Spring is not known, but the allocation and withdrawal are 0.166 mgd. There have been reports of high nitrate levels in Gravers Spring. The average daily withdrawal by the East Petersburg Water Authority is 0.312 mgd. The system is interconnected with the City of Lancaster Water Authority.

The East Hempfield Township Water Authority serves an area west of the site, no farther north than Route 283 and no farther east than Little Conestoga Creek. The total population served is 3,939. The system relies on five wells for its sources; all wells are located between 3.6 and four miles west of the site along Church Road, south of Route 283 and north of Route 23. The wells are between 150 and 500 feet deep. Together, the four northernmost wells are allocated 0.96 mgd. The fifth and southernmost well, located about one mile farther south, is allocated 0.102 mgd; however, the well is overdrawn, at 0.132 mgd. The total average daily withdrawal by the East Hempfield Township Water Authority is 1.1 mgd. There are no interconnections.

Geology Information

The site is located in the Conestoga Valley Section of the Piedmont Physiographic Province. The topography is characterized by gently rolling hills and wide valleys. The major characteristic of the Conestoga Valley Section is the presence of limestone and dolomite at the surface. Scattered sinkholes in the area are evidence of the underlying carbonates. The site is located in a wide valley, the floor of which is approximately 300 feet lower than the adjacent hilltops.¹

In addition, a northeast-southwest-trending thrust fault northwest of the site separates carbonate rocks of similar age in the Great Valley by a downfaulted basin containing Triassic age rocks. The carbonates extend eastwardly from the section in a very narrow valley (the Chester Valley) to a point north of Philadelphia.²

The geologic structure of the area is complex, because it is in a zone of uplift and variable folding. The most prominent structure is a northeast-southwest-trending anticlinal uplift, which occurs one mile north of the subject site. Folds in the area are generally open, separating the zones to the north and south, which contain tight, isoclinal folds. Cleavage is scarce due to the open folds, and it is difficult to relate to the folds to the south and north. Faulting, mostly thrust faults, makes the zone structurally challenging. The nature and origin of some faults are still unknown.²

The site is underlain by the Ledger Formation of probable early Cambrian age. It consists of predominantly massive, light gray, medium coarsely crystalline, sparkling dolomite. A freshly exposed rock will exhibit a dark, indefinite, trail-like or tunnel-like structure, which may be organic or inorganic in origin. Beds at the lower and upper sequences of the formation are very finely crystalline. There are no limestone beds exposed in the formation, and no fossils have been found. The formation is estimated to be 1,000 feet thick. Specifically, beneath the subject site, the formation is estimated to be no more than 500 feet thick.²

Underlying the Ledger Formation is the Kinzers Formation of early Cambrian age. This age is confirmed by the presence of lower Cambrian fossils. The upper member of the Ledger Formation is a thick-bedded, medium to finely crystalline, shale-bearing, massive, silty limestone. The middle member is a pure limestone, and the lower member is a medium gray shale displaying rusty weathering streaks along joints or bedding planes. The bedding planes may be easily confused with cleavage. The formation is estimated to be between 300 and 600 feet thick. The shale member crops out 3/4 mile southwest of the subject site, east of Chestnut Hill, between Rohrerstown and Florys Mill. It is observed to be complexly folded and gently plunging to the east and northeast.²

Overlying the Ledger Formation is the Zooks Corner Formation of probable middle Cambrian age. The Zooks Corner Formation interfingers with the Ledger Formation. The lithology is thin- to thick-bedded, medium gray, very finely crystalline dolomite. It contains many planar features such as color bands and siliceous and shale laminae. Sedimentary structures include small-scale ripple marks, mud cracks, graded bedding, and cross laminations. Other structures present on a pervasive scale may be due to soft sediment deformations. This formation crops out approximately 10 miles east of the site, 0.6 mile southwest of Zooks Corner along Conestoga Creek.²

Soils at the subject site are part of the Hagerstown-Urban land complex. It is moderately permeable, with a high water capacity. Surface soil can be strongly acidic to neutral, having a medium surface runoff rate. The surface layer is a dark brown silt loam about 10 inches thick, grading into a subsoil of red silty clay of the same thickness. The red clay becomes firmer for the next 10 inches, into a strong brown silty clay in the lower part. The total depth of the subsoil is approximately 60 inches.³

Groundwater Information

The Ledger Formation is the aquifer directly underlying the site. Pumping tests of wells in the Ledger Formation indicate that it is the highest yielding formation of Cambrian age in the Lancaster quadrangle. It is an excellent source for small public supply and domestic use [82 percent of wells have specific capacities greater than 0.5 gallons per minute (gpm) per foot drawdown] and a fair source for industrial use.²

The Ledger Formation may be considered to be a diffuse-flow aquifer, which is typical of dolomite rocks. Groundwater movement occurs along joints and cleavage/bedding planes, which have been only modestly affected by solution. Groundwater is not concentrated along certain zones, and well yield is fairly constant throughout the aquifer. Wells located in vertical fractures have a higher yield, possessing both vertical and horizontal conductivity. The water table is well defined and flat, because the high hydraulic conductivity fluctuates in response to the recharge rate and may rise to a substantial elevation above the regional base level. Flood waters from surface streams can enter the aquifer and reverse the normal flow during these conditions.^{2,4}

Groundwater at the site is expected to flow southwestwardly under normal conditions.

Summary of Activities

On December 21, 1988, NUS FIT 3 personnel [REDACTED] conducted a non-sampling site reconnaissance of the Howmet Corporation site located in Lancaster, Lancaster County, Pennsylvania. FIT 3 was accompanied by Steven Kirchner, supervisor of Environmental Affairs for Alumax Mill Products. Weather conditions during the site visit were overcast, with a medium to light rain. The temperature was 43°F. Photographs were taken on site (see attachment 1).

Persons Contacted

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At the Site

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Water Supply Well Information

An NUS FIT 3 home well survey within the site vicinity revealed three private wells within 1/4 mile of the subject site (see figure 3, page 12). One well is upslope and two wells are downslope of the normal flow regime. Completed well questionnaires can be found in attachment 3.

It is expected that, within a three-mile radius of the site, people north of Route 283 and west of East Petersburg rely on domestic supply wells as a potable water source. Although undocumented, the number of people in this area is believed to be about 3,500 persons.

Site Observations

- The HNU was set on the 0 to 20 scale. The background reading was 1 ppm; there were no readings above background.
- The mini-alert was set at the X1 position; no readings above background were recorded.
- The site is 87 acres in size.
- The site was enclosed by a 10-feet-high chain-link fence.
- There was a guardhouse near the main entrance.
- The site is located on commercial land. To the north, east, and south is industrial land, and to the west is residential land.
- The area containing the filled quarry had been paved. An above-ground storage tank was situated over part of the old quarry at the time of the FIT visit.
- Most of the site had been paved.
- The site is in a topographic low and is fairly flat.
- Tributary no. 2 to Little Conestoga Creek flows north to south beneath the site.
- There were no soil stains or stressed vegetation.
- No leachate seeps were observed.
- An area of ponded water (lagoon) exists along the southern end of the site. It is permitted and monitored by PA DER.
- Three old supply wells remained on site at the time of the FIT visit. Well no. 9 was in the approximate location of the old quarry.
- Several piles of aluminum blocks were identified on the western section of the site.

Geology and Groundwater References

1. United States Geologic Survey. Lancaster, Pennsylvania Quadrangle, 7.5 Minute Series. Topographic Map. 1956, photorevised 1987. Combined with Columbia East, Pennsylvania Quadrangle, 7.5 Minute Series. Topographic Map. 1956, photorevised 1976.
2. Meisler, H., and A.E. Becher, United States Geological Survey. Hydrogeology of the Carbonate Rocks of the Lancaster 15-Minute Quadrangle, Southeastern Pennsylvania. Bulletin W26, 1973.
3. United States Department of Agriculture, Soil Conservation Service. Soil Survey of Lancaster County, Pennsylvania. May 1985.
4. Fetter, C.W. Applied Hydrogeology. Ohio: Merrill Publishing Company, Second edition, 1988.